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TRIENNIAL REPORT

ON

VACCINATION

BIHAR AND ORISSA

FOR THE YEARS

1914-15, 1915-16 & 1916-17



PATNA:

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRINTING, BIHAR AND ORISSA
1917.

[Price—Indian, 6 annas ; English, 6d.]

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TRIENNIAL REPORT

ON

VACCINATION,

BIHAR AND ORISSA,

FOR THE YEARS

1914-15, 1915-16 & 1916-17.

1. **Staff.**—Vaccination work in the Province is chiefly carried out by a special staff of vaccinators, the majority of whom are licensed, but a few of whom are paid. In municipalities and in the district of Sambalpur and largely in Puri the work is done by paid vaccinators and since the end of 1916 paid vaccinators have been temporarily employed in the Singhbhum district and in Angul. Elsewhere throughout the Province vaccination has been carried out under the licensing system, except for the employment of paid vaccinators for short periods to deal with outbreaks of small-pox.

The total number of vaccinators employed in the Province during the last three years have been as follows :—

Year.						Licensed.	Paid.
1914-15	...	...	...	...	...	995	143
1915-16	...	...	...	...	...	986	184
1916-17	...	...	...	...	...	1,086	207

The increase in the number of paid vaccinators is chiefly due to their temporary employment in Singhbhum and Angul and the increase in the number of licensed vaccinators in the last year under report is due to the redistribution of *elakas* on a population basis which was carried out under my orders in 1916.

The inspecting staff now consists of 20 District Inspectors of Vaccination and 65 Sub-Inspectors of Vaccination (including 3 deputed for duty at the Vaccine Depot) in addition to the three Sub-Assistant Surgeons combining vaccination inspection with other duties in Angul. During 1915-16 two additional appointments were sanctioned in order to provide Sub-Inspectors for the new Sub-division at Simdega and for the compulsory vaccination area in Patna, but otherwise the cadre has remained constant during the three years under report.

2. **Operations Performed.**—The average number of operations performed each year between 1915-17 was 1,227,012 as compared with an average of 1,306,556 during the previous three years. Of these operations 95·02 were primary and 4·97 were revaccinations as compared with 97·48 per cent. and 2·51 per cent., respectively, in the previous three years. The average number of operations performed annually by each vaccinator was 1,023 as compared with 1,136 in the previous three years.

The total numbers of operations performed during the last three years have been as follows :—

Year.					Total number of operations.	Number performed by Vaccinators.
1914-15	...	...	...	...	1,307,295	1,288,432
1915-16	...	...	...	...	1,283,308	1,250,599
1916-17	...	...	...	...	1,090,434	1,072,081

Of the total number of operations performed the majority have been primary as is shewn in the following statement :—

Year.					Primary.	Secondary.
1914-15	...	...	...	...	1,235,571	52,861
1915-16	...	...	...	...	1,200,351	50,248
1916-17	...	...	...	...	1,039,575	32,506

Both primary operations and revaccinations have fallen off very considerably in numbers during the last two years. It is doubtful whether the statistics of past years can be accepted as accurate as they show a primary vaccination rate considerably in excess of the birth-rate which is an obvious impossibility over an extended period of years. As it was the custom in Bengal to expect an increase in the returns every year and to arrange promotions accordingly, I think it probable that the old returns and standards were fictitious. Nevertheless I am not satisfied with the present state of affairs which now shews a primary vaccination rate of about 31 per thousand which is well within the limits of possibility and I have accordingly increased the number of vaccinators and brought considerable pressure to bear on the inspecting staff with a view to improving the quality and increasing the quantity of vaccination work.

The percentages of successful operations out of the total number of operations performed during the last three years have been as follows :—

1914-15	...	...	98.12
1915-16	...	...	97.23
1916-17	...	...	97.27

3. Vaccination in Districts.—The total number of operations performed in this Division increased by 81,491 in the three years under report as compared with the previous period. Patna District showed an increase of 47,082 and Shahabad an increase of 41,306, but in Gaya there was a decrease of 6,897.

Owing to the high rates of small-pox mortality prevailing in previous years in the districts of this Division, special efforts were made in the last two years to improve the works, and new and energetic inspecting officers have been posted to the districts of Patna and Shahabad. During the period under report Act V of 1880 and Act II of 1911 making vaccination compulsory were enforced throughout the Patna and Phulwari thanas of Patna District.

In the two districts of Saran and Muzaffarpur the number of operations during the three years under report decreased by 15,964 and 8,098, respectively. Tirhut Division. Whilst in the two districts of Darbhanga and Champaran the numbers increased by 19,392 and 2,995 respectively. The work in this Division meets

with less opposition than in any other Division of the Province and is carried out more thoroughly.

The Bhagalpur Division shows the worst record of the three Divisions of Bihar. In all the four districts there has been a serious decrease in the number of operations performed, the falling off amounting to 33,387 operations in the Santal Parganas, 17,382 in Monghyr, 16,971 in Bhagalpur, and 7,320 in Purnea during the three years' period.

In the Orissa Division the decrease in the number of operations performed during the last three years has been large, amounting to 138,464 in Cuttack, 78,310 in Balasore, 51,679 in Puri, and 11,617 in Sambalpur. In Angul alone has there been an increase amounting to 6,728. I have reason to believe that the returns from the Orissa Districts from 1909 up to 1911 were largely fictitious. A special campaign was being pressed during these years by the Sanitary Commissioner, Bengal, and the returns went up by leaps and bounds to figures which showed a vaccination ratio very largely in excess of the birth-rates. Whilst I do not consider that there has been an actual decrease in the work to any thing like the extent which would appear from the figures quoted, nevertheless I am dissatisfied with the work of the Vaccination Department in Orissa and I have taken action against the Inspecting Officers who are chiefly responsible for bad work.

In four out of the five districts (Palamau being the exception) there were small decreases in the number of operations performed, amounting to 7,020 in Ranchi and 6,177 in Hazaribagh and to smaller numbers in other districts.

Act II of 1911 and Act V of 1880 were enforced at Sakchi and in the Mining Settlement area at Jharia during the period under review and there has been no difficulty in getting the work of compulsory vaccination efficiently carried out.

In the Orissa and Bhagalpur Divisions there has been a serious decrease in the amount of work and departmental action has already been taken to deal with the staff. In the other three Divisions of Patna, Tirhut and Chota Nagpur, the results have been fairly satisfactory during the last three years. In my opinion it is probable that the recently introduced methods of checking vaccinators' work and returns in absolute detail have had a considerable influence in reducing the numbers of reported operations. But there is no doubt but that there is still scope for a considerable increase in the amount of work actually done and I accordingly arranged to increase the number of vaccinators in the Province in September 1916, and to supply a larger quantity of vaccine than had been issued in the previous years.

If necessary, I propose to extend those measures further and I anticipate that some results should become apparent by next year.

4. Vaccination in towns and compulsory areas.—During the triennial period under review the Vaccination Acts were extended to the Patna and Phulwari thanas of Patna, to the Mining Settlement area of Jharia, and to Sakchi and Padma. Statement VII shows the details of Municipal vaccination from which it appears that in Bhagalpur and Darbhanga the work has been consistently bad and that it has been unsatisfactory in several of the other large towns. On the other hand, in several municipalities, noticeably in Cuttack, more children were vaccinated than were recorded as being available.

5. Work done in the Native States under the supervision of the Political Agent.—Vaccination work in the Orissa Feudatory States has steadily developed during recent years under the direction and encouragement of the Political Agent.

The following tabulated statement shows the results for the last 12 years :—

Year.					Total number of Vaccinations.	Total number of Revaccinations.
1					2	3
1905-06	...	...	...	...	117,619	.....
1906-07	...	...	...	...	165,967	43,498
1907-08	...	...	...	...	187,150	69,685
1908-09	...	...	...	...	226,042	97,078
1909-10	...	...	...	...	269,728	142,911
1910-11	...	...	...	...	310,962	163,162
1911-12	...	...	...	...	341,701	179,688
1912-13	...	...	...	...	387,190	215,438
1913-14	...	...	...	...	430,720	261,225
1914-15	...	...	...	...	419,562	260,707
1915-16	...	...	...	...	454,699	281,913
1916-17	...	...	...	...	* 504,948	* 311,670

* Excluding the figures of the State of Rairakhol.

The figures above quoted speak for themselves and are a very satisfactory record of the work done to stamp out and prevent small-pox in these States. Both vaccination and to a large extent revaccination are practically compulsory in the majority of these States and both the record and the results of the work are eminently satisfactory.

6. Protection of infants.—During last year out of 1,052,193 the estimated number of children under one year available for vaccination 492,588 equal to 468 per thousand were successfully vaccinated as compared with 620,702 equal to 576 per thousand in the previous year.

The protection of infants in municipalities is separately shown in Statement VII and works out a ratio of 681 per *mille* of the surviving population. These figures are very unsatisfactory as they show that more than half the total number of operations are performed on children over one year of age. Whilst the ratio of protected children under one year of age has fallen to below 500 per thousand, the total number of operations performed is still in excess of the total number of infants available as it always has been. In previous years the excess has been very marked and as there has been a constant excess it must be inferred that the returns are to that extent on the average fictitious.

Civil Surgeons and Deputy Sanitary Commissioners are unanimous in attributing the opposition to vaccination to be concerned more with the age of the child than with the operation itself and in view of the strong popular prejudice which exists against vaccination of infants at an early age I consider that it is desirable that the Vaccination Act should be amended so as to raise the age for compulsory vaccination to one year instead of six months.

7. Incidence and Mortality of Small-pox.—During the first two years of the period under report the death-rate from small-pox increased from .11 to .22 and again to .42, but during last year it has fallen to .28.

The Patna Division has always been a hot bed of small-pox, second only to the Orissa Division in the prevalence of the disease.

Patna Division.

During the last two years efforts have been made to extend and improve vaccination work in the Patna Division and during the last year of the period under report there has been a decrease in the death-rate from small-pox in the Patna Division amounting to over 50 per cent.

In the Tirhut Division the death-rate from small-pox has always been low and there is no doubt but that this Division is the best vaccinated Division in the Province.

Tirhut Division.

In the Bhagalpur Division the mortality has always been higher than in Tirhut but has never recently exceeded the mortality in the Patna Division.

Bhagalpur Division.

The Orissa Division has the unenviable position of returning the highest death-rate from small-pox and is headed by the Sambalpur District with a death-rate of 1.09 last year which is almost double the death-rate in Puri District (.52) and Cuttack (.46) which are the districts with the next highest death-rates in the Province.

Orissa Division.

In Chota Nagpur small-pox is not very prevalent and this Division shares with Tirhut the reputation of being well vaccinated and having a low small-pox mortality.

Chota Nagpur Division.

8. Prevention of Small-pox.—In last year's Annual Report I recommended that the Vaccination Act should be modified and generally enforced throughout the Province. As that proposal has not been accepted I would now suggest that it should be tried on a small scale in one Division and I would propose to choose the Orissa Division in which vaccination is in a very backward and unsatisfactory state and in which small-pox has been unduly prevalent for many years.

9. Inspection of work.—During the three years under report the three Deputy Sanitary Commissioners inspected a large number of children most of whom had undergone primary vaccination.

The numbers are as follows :—

1914-15	...	...	...	...	8,781
1915-16	...	...	...	...	133,895
1916-17	...	...	...	...	213,885

The figures for the first year were abnormal as there were only two Deputy Sanitary Commissioners and both of them were employed on special duty during most of the inspecting season. The inspection work done during the last year under report has been very extensive and thorough and has covered all the districts of the Province except Angul.

The Civil Surgeons of the Province have inspected a considerable number of operations, the numbers of which are shown in the following statement :—

Year.				Primary.	Secondary.
1				2	3
1914-15	...	...	...	78,646	7,162
1915-16	...	...	...	82,485	10,265
1916-17	...	...	...	67,096	6,263

It should be noted that the methods of inspection of Civil Surgeons and Deputy Sanitary Commissioners are different. Civil Surgeons inspect the new work which has just been done and the numbers returned by them are therefore smaller, whereas Deputy Sanitary Commissioners inspect all the children under ten years of age and look at old work as well as new work and also look for unvaccinated children and children who are marked with small-pox.

10. The Officers of the Inspecting Staff.—The Officers of the Inspecting staff have not yet attained to a satisfactory standard of efficiency. A few of them are energetic and capable and these men have been rapidly promoted and put in the most responsible positions. The majority, however, are careless and negligent and do not attempt to carry out their duties honestly and efficiently. The standing rules of the Department and recent orders have been enforced with considerable stringency in order to imbue the staff with some sense of discipline. As that does not yet appear to have been sufficiently attained the process at present continues and a large number of inspecting officers have been punished during the last year under report. At the end of the last two working seasons a list of the punishments and promotions has been circulated for general information amongst the members of the staff.

In July 1916 a class of instruction was held at Gulzarbagh for four days to which the entire staff of Inspectors and Sub-Inspectors was summoned and at which lectures and demonstrations were given on the methods of operation, the nature and scope of the duties of Inspecting Officers, the Rules and Regulations of the Department, the use of Forms and Registers and the methods of maintaining and checking them, and the standard of efficiency and work expected from the staff.

II. Supply of Vaccine.—The Vaccine Depôt at Namkum was opened during the first year of the period under report. In the first year a partial supply of vaccine was issued and during the last two years the full requirements of the Province were met and a reserve stock was established.

The following tabulated statement shows the number of doses manufactured, the number of doses issued, and the number of doses in reserve during the three years under report :—

Year.	Number of doses manufactured.	Number of doses issued.	Number of doses in reserve.
1	2	3	4
1914-15	771,696	541,259	230,437
1915-16	3,127,290	1,798,239	1,559,488
1916-17	2,842,710	* 2,17,730	1,705,174

* NOTE :—In addition to the 2,017,730 doses issued, 679,000 were destroyed as they had become inert owing to a temporary failure of the cold storage plant during the summer and 294 doses were lost in the process of manufacture.

The following tabulated statement shows the numbers of calves purchased or hired, the numbers of doses manufactured, the average numbers of doses yielded per calf, the total gross cost and the total revenue and the average net cost per dose for the three years under report :—

Year.	Number of calves purchased or hired.	Number of doses manufactured.	Average number of doses yielded per calf.	Total gross cost.	Total revenue.	Average net cost per dose.
1	2	3	4	5	6	7
				Rs	Rs.	Pies.
1914-15	5,07	771,696	1522.08	19,367	...	4.8
1915-16	1,267	3,127,290	2468.26	34,537	4,637	1.8
1916-17	1,129	2,842,710	2517.90	34,936	13,518	1.4

In the first year under report the work had just begun and many difficulties were encountered. In 1915-16 the work and management were reorganized and the output was greatly increased. In 1916-17 the output required was not so great as a reserve stock had been established, and it was found advisable to close the Dépôt in May and June as the vaccine previously made in these hot months had been deficient in quantity and defective in quality. Unfortunately during this year there was a loss of 679,000 doses owing to a failure of the cold storage plant and it was only by working at very full pressure during the cold weather that the reserve stock could be maintained. The defect in the quality of the vaccine was first reported when it was issued at the beginning of the working season and before the vaccine could be tested a considerable number of doses had issued and resulted in a large number of "failed" operations at the beginning of the season.

All vaccine is now tested both at the time of manufacture and at the time of issue and as a precautionary measure the dilution with glycerine has been decreased from 1 in 6 to 1 in 5. This decrease in dilution combined with the increased cost of all stores and materials owing to the war has prevented a much greater diminution in the cost of production. Nevertheless in spite of these disadvantageous circumstances the working costs of this Dépôt are now very low as compared with any other Dépôt in India and the vaccine now issued is giving very satisfactory results.

During the last year under report arrangements have been made to issue lanolinized vaccine to the Orissa Feudatory States at the request of the Political Agent. The dilution is less and the cost to the Dépôt is greater but it appears to stand long journeys better and gives general satisfaction.

Epidemics of foot and mouth disease have stopped the work of the Dépôt four times in the three years, but the loss of time has been made up and the output of vaccine has been ample. The chief loss through these epidemics arises from the loss of calves and of vaccine in the making as the sick calves have to be disearded.

This loss, together with the loss of calves from accidents and other causes, greatly diminishes the apparent output per calf which has really been greatly increased by improved feeding and technique and is actually over 3,000 doses per calf kept and used.

The system of direct fortnightly issues to vaccinators has been continued. The cost to the Dépôt is greater as the number of postal packages is large but the results are good. There is no loss of time or of the freshness of the vaccine and there is really a saving owing to the packages being posted only once instead of issuing to Civil Surgeons and being reposted by them.

The staff of the Dépôt has worked well during the last year and special credit is due to Dr. T. Sebastian and Dr. C. N. Banarji for their good work.

12. Experimental work.—During the last two years a large number of experiments has been carried out at the Dépôt with a view to determining the best dilutions and the best medium for vaccine preparations. The experiments have not yet been completed but they show that no vaccine will stand a high temperature for more than a week and that glycerine vaccine is the most stable preparation so far dealt with. Lanoline paste gets bad very quickly unless protected by the inclusion of some glycerine and the great difficulty at present is to get really neutral lanoline or glycerine for use as a medium. Either substance if even slightly acid renders the vaccine inert very rapidly and owing to the war it is almost impossible to get pure lanoline and very difficult to get good glycerine.

Experiments have also been made with a view to increasing the output per calf and have resulted in almost doubling the amount of vaccine obtained from each calf actually used.

Further experiments are being carried out in the packing and manufacture of the vaccine with a view to getting a product which will remain potent longer than ten days when issued and which will be easier to pack and handle than the

glycerine vaccine at present issued in capillary tubes. Collapsible tin tubes are desirable but a less fluid preparation is required for issue in them.

13. Cost of the Department .—The cost of the Department during the three years under report has been as follows:—

Year.					Total Cost,		
					Rs. a. p.		
1914-15	...	...	...	...	98,421	3	6
1915-16	...	...	...	...	1,12,336	0	2
1916-17	...	...	...	...	1,09,664	10	5

The cost during the year 1916-17 is detailed in Statement II and shows a total expenditure of Rs. 1,09,664-10-5 or Rs. 2,671-5-9 less than the previous year.

The cost per successful operation rose from Re. 0-1-2 in 1914-15 to Re. 0-1-5 in 1915-16 and to Re. 0-1-8 in 1916-17. In the first year the rise in cost per operation was due to the increase in establishment, viz., one Deputy Sanitary Commissioner and his office establishment and two Sub-Inspectors of Vaccination and in the last year under report it was due to the large decrease in the number of operations performed.

14. General.—I had expected better results than have been obtained during the last year under report; but I have found the inspecting staff slow to respond to the more stringent supervision and control which have been recently exercised over them. Other factors have also operated against good results during the last year. Owing to the lateness of the rains and the occurrence of the Puja holidays in the first half of October work did not begin until nearly the end of October and when it began the results were at first bad owing to the issue of inert vaccine and apparently it proved to be too great a task to make up for the bad start which was thus obtained. I anticipate better general results next year and I propose to still further increase the issue of vaccine with a view to obtaining better results.

In conclusion, I desire to bring to the notice of Government the large amount of useful work done by the three Deputy Sanitary Commissioners during the year in inspecting vaccination work and reporting on the efficiency of the staff and work in almost all the districts of the Province.

W. C. ROSS, MAJOR, I.M.S.,

Offg. Sanitary Commissioner.

STATEMENTS.

Statement No. I.—Showing particulars of Vaccination in the

Number.	District.		Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Total.
						Male.	Female.	Total.		
1	2		3	4	5	6			7	8
Patna Division.										
1	Patna	By paid Vaccinators ...	1,609,631	777	15	6,032	5,404	11,466	764	11,102
		By licensed Vaccinators ...			60	29,049	27,762	56,811	946	56,808
2	Gaya	By paid Vaccinators ...	2,161,010	458	12	3,335	3,206	6,541	545	6,451
		By licensed Vaccinators ...			83	24,634	24,515	49,149	592	49,141
3	Shahabad	By paid Vaccinators ...	1,865,660	426	10	1,952	1,837	3,789	378	3,710
		By licensed Vaccinators ...			84	25,315	22,397	48,012	571	48,010
Total of Patna Division		By paid Vaccinators ...	5,636,301	505	37	11,349	10,447	21,796	589	21,263
		By licensed Vaccinators ...			227	79,298	74,674	153,972	678	153,959
Tirhut Division.										
4	Saran	By paid Vaccinators ...	2,289,778	853	8	1,998	1,785	3,783	473	3,745
		By licensed Vaccinators ...			87	37,863	34,790	72,653	835	72,653
5	Champaran	By paid Vaccinators ...	1,903,385	540	4	1,433	1,245	2,678	669	2,573
		By licensed Vaccinators ...			67	24,364	22,160	46,524	694	46,461
6	Muzaffarpur	By paid Vaccinators ...	2,845,514	937	12	2,496	2,170	4,666	389	4,141
		By licensed Vaccinators ...			75	43,225	41,179	84,404	1,125	84,327
7	Darbhanga	By paid Vaccinators ...	2,929,682	875	7	1,342	1,286	2,628	375	2,612
		By licensed Vaccinators ...			88	48,756	44,950	93,706	1,064	93,599
Total of Tirhut Division		By paid Vaccinators ...	9,973,359	791	31	7,269	6,436	13,765	442	13,071
		By licensed Vaccinators ...			317	154,208	143,079	297,287	937	297,040
Bhagalpur Division.										
8	Monghyr	By paid Vaccinators ...	2,131,381	543	11	1,877	1,509	3,686	335	3,592
		By licensed Vaccinators ...			59	32,810	30,934	63,744	1,080	63,744
9	Bhagalpur	By paid Vaccinators ...	2,139,318	506	12	1,786	1,521	3,307	276	3,111
		By licensed Vaccinators ...			62	32,354	31,067	63,421	1,023	63,383
10	Purnea	By paid Vaccinators ...	1,989,637	398	10	1,768	875	2,643	264	1,561
		By licensed Vaccinators ...			53	30,257	24,088	54,345	1,045	47,998
11	Santal Parganas	By paid Vaccinators ...	1,882,781	344	5	1,071	935	2,006	401	1,817
		By licensed Vaccinators ...			62	23,327	22,083	45,410	732	4,4815
Total of Bhagalpur Division.		By paid Vaccinators ...	8,143,117	437	38	6,502	5,140	11,642	306	10,081
		By licensed Vaccinators ...			235	118,748	108,172	226,920	965	219,940
Orissa Division.										
12	Cuttack	By paid Vaccinators ...	2,109,139	577	11	5,966	3,817	9,783	869	6,244
		By licensed Vaccinators ...			63	35,754	31,528	67,282	1,068	66,798
13	Balasore	By paid Vaccinators ...	1,055,568	506	6	2,446	1,414	3,860	643	1,343
		By licensed Vaccinators ...			37	10,534	9,767	20,301	548	17,210
14	Angul	By paid Vaccinators ...	199,405	118	12	2,037	1,668	3,705	309	2,609
		By licensed Vaccinators ...			15	4,330	4,121	8,451	563	2,994
15	Puri	By paid Vaccinators ...	1,023,402	409	29	16,644	14,239	30,883	1,064	30,569
16	Sambalpur	By paid Vaccinators ...	744,193	194	13	11,474	10,940	22,414	1,724	21,393
Total of Orissa Division		By paid Vaccinators ...	5,131,707	373	71	38,567	32,078	70,645	995	62,158
		By licensed Vaccinators ...			115	50,618	45,416	96,034	835	87,002

Districts of Bihar and Orissa during the year 1916-17.

Primary Vaccination.				Revaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.	
Successful				Total.	Successful.	Unknown.	Primary.	Revaccination.		Primary.	Revaccination.	Number.	Ratio per 1,000 of population.	Number.	Ratio per 1,000 of population.
Under one year.	One year and under six years.	Total of all ages.	Unknown.												
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
5,499	84,990	10,614	288	364	202	...	98'15	55'49	42'16	2'59	...	54,407	33'80	501	·31
25,087	30,498	56,408	114	3	99'67	...		·20	...				
3,048	2,224	6,333	21	90	49	40	98'49	87'50	25'07	·32	44'44	68,276	31'59	491	·22
15,837	32,384	48,781	78	8	8	...	99'42	100'		·15	...				
2,790	760	3,579	48	79	60	7	97'73	83'33	27'42	1'29	8'86	52,940	28'37	346	·18
20,084	23,800	47,424	96	2	2	...	98'97	100'		·19	...				
11,337	8,974	20,526	357	533	311	47	98'18	63'99	30'77	1'67	8'80	175,623	31'15	1,338	·23
61,008	86,682	152,613	288	13	10	...	99'24	76'92		·18	...				
1,434	1,860	3,497	126	38	24	3	96'62	68'57	32'70	3'36	7'89	82,110	35'86	182	·07
28,205	40,685	70,921	888	98'82	...		1'22	...				
1,133	1,298	2,550	4	105	87	2	99'26	84'46	25'06	·15	1'90	59,643	31'24	169	·08
21,360	24,245	46,160	72	63	52	1	99'50	83'87		·15	1'58				
2,499	1,559	4,067	40	525	363	...	99'17	69'14	30'92	·96	...	103,381	36'33	256	·08
37,357	46,421	83,917	22	77	57	17	99'53	95'00		·02	22'07				
1,623	921	2,554	2	16	3	...	97'80	18'75	32'77	·07	...	92,279	31'50	477	·16
50,188	42,768	93,921	40	107	56	...	99'43	54'20		·04	...				
6,689	5,638	12,668	172	684	477	5	98'20	70'25	22'87	1'31	·73	337,422	33'83	1,084	·10
137,110	154,119	294,019	1,022	247	167	18	99'32	72'92		·34	7'28				
1,897	1,609	3,574	...	94	71	...	99'49	75'53	31'54	...	...	83,268	39'06	723	·32
17,539	45,707	63,584	4	99'75	...		·006	...				
1,618	1,330	3,048	40	196	103	14	99'54	56'59	31'27	1'57	7'14	73,964	31'57	846	·39
32,577	29,837	62,566	36	38	31	1	98'76	83'78		·05	2'63				
907	625	1,539	5	1,082	504	77	98'90	50'14	26'64	·32	7'11	55,153	27'75	536	·26
25,968	20,728	46,920	49	6,347	4,055	662	97'85	71'32		·10	10'43				
966	807	1,783	14	189	98	34	98'89	63'22	24'87	·77	17'98	39,540	31'62	435	·23
28,285	15,741	44,426	124	595	376	83	99'40	73'43		·27	13'95				
5,388	4,371	9,944	68	1,561	776	125	99'31	54'04	28'57	·67	8'00	271,925	33'39	2,540	·31
104,369	112,203	21,7496	213	6,980	4,462	746	98'98	71'57		·09	10'68				
2,185	3,084	5,851	275	3,539	1,122	1,150	98'02	46'96	34'80	4'40	32'49	125,754	59'62	426	·20
29,394	33,409	65,634	601	484	241	101	99'14	62'92		·89	29'86				
356	808	1,243	26	2,517	1,762	305	94'38	79'65	21'01	1'93	12'11	58,353	55'28	447	·42
3,509	12,627	16,603	301	3,091	2,310	534	98'19	90'34		1'74	13'68				
917	1,338	2,294	159	1,096	910	57	93'22	90'47	46'28	6'09	5'20	7,156	35'88	1	·005
1,137	1,022	2,191	114	5,457	3,811	369	76'07	74'90		3'80	6'76				
8,834	17,149	28,731	1,152	314	158	56	97'66	61'24	28'55	3'76	17'83	45,189	44'15	90	·08
12,958	6,511	19,483	755	1,021	183	535	99'40	37'65		3'52	52'39		26,933	36'12	131	·17
25,250	28,890	57,592	2,367	8,497	4,165	2,103	96'33	65'24	29'33	3'80	24'77	263,387	51'32	1,095	·21
31,040	47,058	84,428	1,016	9,032	6,362	1,004	98'18	79'24		1'16	11'11				

Number.	District.	Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Total.	
					Male.	Female.	Total.			
1	2	3	4	5	6			7	8	
Chota Nagpur Division.										
17	Hazaribagh ...	{ By paid Vaccinators ... } { By licensed Vaccinators ... }	1,288,609	183	{ 4 43	728 20,417	778 18,804	1,506 39,221	376 912	1,426 39,091
18	Ranchi ...	{ By paid Vaccinators ... } { By licensed Vaccinators ... }	1,387,073	194	{ 3 44	808 21,825	828 21,232	1,636 43,057	545 978	1,570 42,640
19	Palamau ...	{ By paid Vaccinators ... } { By licensed Vaccinators ... }	687,710	139	{ 5 30	1,340 12,650	731 11,526	2,071 24,216	414 807	503 24,135
20	Manbhum ...	{ By paid Vaccinators ... } { By licensed Vaccinators ... }	1,547,576	373	{ 10 55	3,892 22,821	3,346 20,577	7,238 43,398	723 789	5,726 43,132
21	Singhbhum ...	{ By paid Vaccinators ... } { By licensed Vaccinators ... }	694,394	178	{ 4 20	839 8,625	556 7,667	1,395 16,292	364 814	786 16,052
Total of Chota Nagpur Division.		{ By paid Vaccinators ... } { By licensed Vaccinators ... }	5,605,362	206	{ 26 192	7,607 86,338	6,239 79,846	13,846 166,184	532 865	10,011 165,050
Total of Vaccine Department.		{ By paid Vaccinators ... } { By licensed Vaccinators ... } Total ...	34,489,846	414	{ 203 1,086 1,289	71,294 489,210 560,504	60,390 451,187 511,577	131,684 940,397 1,072,081	648 865 831	116,584 922,991 1,039,575
Total Dispensary Department		...	...	...	1	101	101	202	202	202
Total Railways		...	...	...	...	753	488	1,241	...	1,006
Total Cooly Department		...	...	...	1	3,374	3,060	6,434	(a) 4,428	3,704
Total Jails and Cantonments		...	...	...	2	9,850	626	9,856	(b) 247	1,667
Grand Total		...	...	...	1,293	574,582	515,852	1,090,434	843	1,046,154

(a) Balasore only.

(b) Cantonment only.

Primary Vaccination.				Revaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.	
Successful.				Total.	Successful.	Unknown.	Primary.	Revaccination.		Primary.	Revaccination.	Number.	Rate per 1,000.	Number.	Rate per 1,000.
Under one year.	Over one and under six years.	Total of all ages.	Unknown.												
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
790	607	1,420	...	80	43	2	99.58	53.08	} 32.70 {	...	...	} 45,924	35.64	154	.11
24,127	14,595	39,068	17	130	102	4	99.94	78.46		.04	3.07				
1,045	491	1,567	...	66	50	...	99.80	75.75	} 33.63 {	...	...	} 49,568	35.70	60	.04
33,286	9,153	42,609	16	417	327	...	99.92	78.41		.03	...				
202	96	449	20	1,563	912	209	92.96	67.10	} 37.14 {	3.97	13.32	} 26,014	37.83	53	.07
17,993	5,790	23,989	95	81	64	5	99.79	84.21		.39	6.17				
1,231	3,621	5,163	109	1,512	572	59	92.85	39.30	} 31.90 {	3.65	3.90	} 62,070	40.11	341	.22
21,372	21,361	43,039	6	263	201	4	99.97	76.71		.01	1.50				
336	344	724	26	609	346	50	98.26	61.89	} 25.09 {	33.08	8.11	} 22,290	32.09	91	.13
10,015	5,892	15,973	20	240	201	1	99.63	84.10		.12	.41				
3,604	5,159	9,323	255	3,835	1,923	320	95.56	54.70	} 31.54 {	2.54	8.34	} 205,866	36.72	699	.12
106,793	56,791	164,708	154	1,134	895	14	99.88	79.91		.09	1.23				
52,268	53,032	110,053	3, 19	15,100	7,652	2,600	97.07	61.21	} 30.23 {	2.76	17.21	} 1,254,223	36.36	6,756	.19
440,320	456,853	913,264	2,693	17,406	1,796	1,782	99.23	81.89		.29	10.23				
492,588	509,885	1,023,317	5,912	32,506	19,548	4,382	98.99	69.50		.56	13.43				
188	14	202	...	...	...	...	100.00	...	...	...	...	...	...	...	...
854	130	989	4	235	174	3	98.60	75.00	...	.39	1.27	...	...	...	...
202	186	1,271	2,433	2,730	565	2,071	100.00	85.73	...	65.63	75.86	...	...	...	...
298	186	1,458	94	8,899	5,492	1,197	92.63	73.46	...	5.63	13.58	...	...	...	...
494,130	510,401	1,027,236	8,443	44,280	25,779	7,653	98.99	70.38	...	.80	17.05	...	...	...	...

Summary.

	Total number of persons vaccinated.	Total number of operations performed.	Percentage of successful cases in which the results were known.	Average number of persons vaccinated by each vaccinator.	Number of children successfully vaccinated.								
	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Vaccinators employed.	Persons vaccinated by each vaccinator.	Under 1 year.	One and under 6 years.	Ratio of successful vaccinations per 1,000 of population.	Total cost of Department.	Average cost of each successful case.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
BY SPECIAL STAFF.												Rs. a. p.	Rs. a. p.
Statement (I) ...	1,039,575	32,506	1,039,575	32,506	98.99	69.50	1,239	831	492,588	5,09,885			
BY DISPENSARY STAFF.													
Statement III ...	202	...	202	...	100.00	...	• 1	202	188	14	30.23	1,09,364 10 5	0 1 8
BY OTHER AGENCIES.													
Railways, Cooly Depot, Jails and Cantonments.	6,377	11,774	6,377	11,774	96.90	73.28	(a) 31	1,641	1,354	502			
Total ...	1,048,154	44,280	1,046,154	44,280	98.99	70.38	1,293	843	4,94,130	5,10,401	30.23	1,09,664 10 5	0 1 8

* Darbhanga only.

(a) Cooly Depot and Cantonment only.

STATEMENT II.

Statement No. II.—Showing the cost of vaccination in the

No.	Circle and district.	European supervising officer.	Expenditure										Pay.
			Pay.	Native supervising officer.	Pay.	Paid vaccinators.	Pay.	Licensed vaccinators.	Pay.	Clerks.	Pay.	Peons, etc.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PATNA DIVISION.				Ra. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.
1	Patna ... ..	...	...	6	1,737 3 7	16	1,301 3 9	60	...	...	...	1	36 0 0
2	Gaya ... ..	...	...	5	1,900 0 0	12	942 10 6	83	30 0 0	...	...	...	...
3	Shahabad ... ..	...	...	5	2,578 6 1	10	761 15 11	84	470 0 0	...	...	...	...
	Total of Patna Division	...	...	16	6,215 9 8	38	3,005 14 2	227	500 0 0	...	...	1	36 0 0
	TIRHUT DIVISION.												
4	Saran ... ..	...	...	4	1,521 2 1	8	660 0 0	87	180 0 0	...	...	...	...
5	Champaran ... ..	...	...	3	1,255 0 0	4	382 0 0	67	...	...	...	...	...
6	Muzaffarpur ... ..	...	...	4	2,202 9 3	12	655 11 2	75	...	...	...	...	...
7	Darbhanga ... ..	...	...	4	1,485 0 0	8	592 7 3	83	46 12 0	1	60 0 0	...	...
	Total of Tirhut Division	...	...	15	6,463 11 4	32	2,990 2 5	317	226 12 0	1	60 0 0	...	...
	BHAGALPUR DIVISION.												
8	Monghyr ... ..	...	...	4	1,495 0 0	11	587 0 0	59	4 0 0	...	...	2	108 0 0
9	Bhagalpur ... ..	...	...	5	2,652 13 8	12	978 9 7	62	...	...	...	...	...
10	Purnea ... ..	...	...	4	1,601 4 0	10	893 8 0	52	...	...	...	...	...
11	Santal Parganas ... ..	...	...	7	2,302 3 9	5	633 1 5	62	...	...	...	...	...
	Total of Bhagalpur Division...	...	...	20	8,051 5 5	38	3,092 3 0	235	4 0 0	...	...	2	108 0 0
	ORISSA DIVISION.												
12	Cuttack ... ..	...	...	4	1,428 11 4	11	1,345 6 9	63	...	...	...	...	...
13	Balasore ... ..	...	...	3	1,165 3 8	7	743 12 7	37	20 0 0	...	...	...	...
14	Angul ... ..	...	...	3	1,293 7 8	12	274 0 0	15	36 8 0	...	...	...	...
15	Puri ... ..	...	...	3	1,260 0 0	29	3,667 11 10	...	...	...	...	...	...
16	Sambalpur ... ..	...	...	3	1,121 7 2	13	1,736 7 6	...	...	...	...	2	50 0 0
	Total of Orissa Division	...	...	16	6,268 13 10	72	7,767 6 8	115	56 8 0	...	...	2	50 0 0
	CHOTA NAGPUR DIVISION.												
17	Hazaribagh ... ..	...	...	4	1,406 10 0	4	287 10 9	43	...	...	...	...	...
18	Ranchi ... ..	...	...	5	1,805 0 0	4	504 0 0	44	...	...	...	...	...
19	Palamau ... ..	...	...	3	1,408 14 2	5	348 14 6	30	...	...	...	...	...
20	Manbhum ... ..	...	...	3	1,166 14 1	10	1,036 9 6	55	...	...	...	...	...
21	Singhbhum ... ..	...	...	3	1,171 10 8	4	214 6 2	20	...	...	...	...	...
	Total of Chota Nagpur Division	...	...	18	6,959 0 11	27	2,501 8 11	192	...	...	...	...	...
	Total of Vaccine Circle	...	...	85	33,958 9 2	207	18,657 3 2	1,086	787 4 0	1	60 0 0	5	194 0 0
	ESTABLISHMENT OF THE DEPUTY SANITARY COMMISSIONER, BIHAR CIRCLE.	...	...	1	6,038 11 3	...	.....	...	...	2	934 4 7	3	263 3 7
	Ditto ORISSA CIRCLE	...	...	1	4,430 15 6	...	.....	...	...	2	960 0 0	2	178 0 0
	Ditto CHOTA NAGPUR CIRCLE	...	...	1	6,255 0 0	...	.....	...	...	2	900 0 0	2	214 0 0
	Total	...	...	3	16,724 10 9	...	.....	...	...	6	2,794 4 7	7	655 3 7
	Total of province	...	...	88	50,683 3 11	...	18,657 3 2	...	787 4 0	7	2,854 4 7	12	849 3 7

Province of Bihar and Orissa during the year 1916-17.

Expenditure					Paid from						Number of all successful vaccinations and revaccinations.	Average cost of each successful case.
Total pay of establishment.	Travelling allowance.	Contingencies.		Total cost.	Imperial Fund.	Provincial Fund.	Local Fund.	Municipalities.	Native States.	Total.		
		Cost of lymph.	Other contingencies.									
15	16	17	18	19	20	21	22	23	24	25	26	27
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.
3,074 7 4	1,347 7 2	...	155 13 0	4,577 11 6	...	3,240 15 3	441 7 9	895 4 6	...	4,577 11 6	67,870	0 1 1
2,872 10 6	1,492 6 11	...	361 9 6	4,726 12 11	...	3,541 0 5	612 0 0	573 12 6	...	4,726 12 11	56,139	0 1 4
3,810 6 0	490 15 6	...	341 13 5	4,643 2 11	...	3,089 5 7	470 0 0	1,083 13 4	...	4,643 2 11	51,176	0 0 3
9,757 7 10	3,330 15 7	...	859 3 11	13,947 11 4	...	9,871 5 3	1,523 7 9	2,552 14 4	...	13,947 11 4	175,185	0 1 3
2,361 2 1	1,254 7 6	...	90 0 0	3,705 9 7	...	2,865 9 7	180 0 0	660 0 0	...	3,705 9 7	74,895	0 0 9
1,637 0 0	936 0 6	...	24 6 6	2,597 7 0	...	2,191 0 6	97 0 0	309 6 6	...	2,597 7 0	49,091	0 0 10
2,858 4 5	504 0 0	...	230 3 6	3,592 7 11	...	2,791 2 9	320 11 2	480 10 0	...	3,592 7 11	88,702	0 0 7
2,184 3 3	1,246 0 0	...	75 4 0	3,505 7 3	...	2,820 8 0	160 0 0	524 15 3	...	3,505 7 3	96,020	0 0 7
9,040 9 9	3,940 8 0	...	419 14 0	13,400 15 9	...	10,668 4 10	757 11 2	1,974 15 9	...	13,400 15 9	308,708	0 0 8
2,194 0 0	1,093 0 0	...	183 0 0	3,470 0 0	...	2,664 0 0	192 0 0	614 0 0	...	3,470 0 0	67,229	0 0 9
3,631 7 3	544 13 0	...	167 6 0	4,343 10 3	...	3,327 10 8	412 3 3	603 12 4	...	4,343 10 3	66,899	0 1 0
2,494 12 0	1,264 11 0	...	61 0 0	3,810 7 0	...	2,916 15 0	293 4 0	600 4 0	...	3,810 7 0	53,018	0 1 2
2,935 5 2	2,415 9 5	...	110 7 0	5,461 5 7	...	4,812 13 2	192 14 5	455 10 0	...	5,461 5 7	46,826	0 1 19
11,255 8 5	5,308 1 5	...	521 13 0	17,985 6 10	...	13,721 6 10	1,090 5 8	2,273 10 4	...	17,985 6 10	233,972	0 1 2
2,774 2 1	1,099 13 6	...	119 0 0	3,992 15 7	...	2,639 8 10	588 0 0	765 6 9	...	3,992 15 7	73,115	0 0 10
1,929 0 3	379 7 0	...	60 0 0	2,368 7 3	...	1,624 10 8	463 15 11	276 12 8	...	2,368 7 3	22,178	0 1 8
1,603 15 8	889 14 0	...	27 10 0	2,521 7 8	...	2,521 7 8	...	...	...	2,521 7 8	9,226	0 4 4
4,927 11 10	1,365 8 0	...	79 6 6	6,372 10 4	...	2,695 8 0	3,511 11 10	165 6 6	...	6,372 10 4	29,228	0 3 5
2,907 14 8	822 4 0	...	83 12 9	3,813 15 5	...	1,978 8 8	1,510 7 6	324 15 3	...	3,813 15 5	19,933	0 3 0
14,142 12 6	4,556 14 6	...	369 13 3	19,069 8 3	...	11,459 11 10	6,074 3 3	1,535 9 2	...	19,069 8 3	153,985	0 1 11
1,694 4 9	960 9 3	...	80 0 0	2,734 14 0	...	2,447 3 3	17 1 6	270 9 3	...	2,734 14 0	42,148	0 1 0
2,369 0 0	1,452 3 3	...	60 0 0	3,881 3 3	...	3,317 3 3	...	564 0 0	...	3,881 3 3	46,637	0 1 4
1,757 12 8	856 13 4	...	50 0 0	2,664 10 0	...	2,315 11 6	161 8 0	187 6 6	...	2,664 10 0	25,542	0 1 8
2,253 7 7	900 4 10	...	71 3 0	3,224 15 5	...	2,103 12 2	954 9 9	166 9 6	...	3,224 15 5	49,379	0 1 0
1,386 0 10	859 10 0	...	63 0 0	2,308 10 10	...	1,955 3 9	196 0 11	157 6 2	...	2,308 10 10	17,429	0 2 1
9,460 9 10	5,029 8 8	...	324 3 0	14,814 5 6	...	12,139 1 11	1,329 4 2	1,345 15 5	...	14,814 5 6	181,165	0 1 3
53,657 0 4	22,166 0 2	...	2,494 15 2	78,317 15 8	...	57,859 14 8	10,775 0 0	9,683 1 0	...	78,317 15 8	1,053,015	0 1 2
7,236 3 5	2,728 12 0	...	544 7 10	10,509 7 3	...	10,509 7 3	...	...	...	10,509 7 3	...	...
5,568 15 6	3,276 15 3	...	821 7 0	9,667 5 9	...	9,637 5 9	...	...	...	9,667 5 9	...	...
7,369 0 0	3,506 13 9	...	294 0 0	11,169 13 9	...	11,169 13 9	...	...	...	11,169 13 9	...	...
20,174 2 11	9,512 9 0	...	1,659 14 10	31,346 10 9	...	31,346 10 9	...	...	...	31,346 10 9	...	...
53,831 3 2	31,678 9 2	...	4,154 14 0	1,09,664 10 5	...	89,206 9 5	10,775 0 0	9,683 1 0	...	1,09,664 10 5	...	0 1 8

B—DISPENSARY VACCINATION.

Statement No. III.—Showing Dispensary Vaccination in the Province of Bihar and Orissa during the year 1916-17.

District.	Number of dispensaries in each district to which a vaccinator is attached.	Average number of vaccinators attached to dispensaries during the year.	Total number of persons vaccinated.	Average number of persons vaccinated by each vaccinator.	Primary vaccination.					Revaccination.			Percentage of successful cases in which the results were known.		Percentage of unknown cases to total cases.	
					Total.	Successful.			Unknown.	Total.	Successful.	Unknown.	Primary.	Revaccination.	Primary.	Revaccination.
						Under one year.	Over one and under six years.	Total of all ages.								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Patna
Gaya
Shahabad
Saran
Champanan
Muzaffarpur
Darbhanga	1	1	202	202	202	188	14	202	...	...	...	...	100'00	...	...	...
Monghyr
Bhagalpur
Purnea
Santal Parganas
Cuttack
Balasore
Angul
Puri
Sambalpur
Hazaribagh
Ranchi
Palamau
Manbhum
Singhbhum
Total	1	1	202	202	202	188	14	202	...	...	...	...	100'00	...	...	...

Comparative Statement No. IV.—Showing the number of persons primarily vaccinated, and the number of those per

Establishment.			Persons primarily							
			1907-08		1908-09		1909-10		1910-11	
			Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.
1			2	3	4	5	6	7	8	9
Government	...	...	...	...	...	...	...	...	...	...
Municipal	...	...	45,895	43,772	48,330	44,769	46,047	43,550	46,553	44,671
Local Fund	...	...	93,848	91,055	96,959	97,104	92,291	91,182	97,068	95,561
Dispensaries	...	...	961	806	689	591	586	472	516	415
Licensed Vaccinators	...	...	1,057,110	1,046,540	1,005,512	994,418	1,053,044	1,052,100	1,118,587	1,109,896
Total	...	...	1,197,814	1,182,123	1,151,490	1,136,882	1,191,968	1,187,304	1,262,724	1,248,543

ons who were successfully vaccinated in the Province of Bihar and Orissa in each of the undermentioned official years.

vaccinated.											
1911-12		1912-13		1913-14		1914-15		1915-16		1916-17	
Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.	Total Number.	Number successfully vaccinated.
10	11	12	13	14	15	16	17	18	19	20	21
...	...	...	...	...	...	649	515	10,277	10,046	3,963	3,441
46,769	44,879	43,379	42,311	44,167	42,480	47,235	45,310	43,099	41,661	38,645	37,226
96,381	95,057	86,551	85,965	82,592	81,790	76,264	75,266	94,056	84,636	80,353	73,103
384	303	188	185	186	186	178	176	285	215	202	202
1,135,713	1,128,318	1,133,310	1,126,927	1,149,467	1,143,922	1,114,753	1,109,554	1,065,023	1,059,266	922,991	913,264
1,279,247	1,268,497	1,263,428	1,255,388	1,276,412	1,268,368	1,239,079	1,230,821	1,212,740	1,195,824	1,046,154	1,027,236

Statement No. V.—Showing particulars of vaccination

District.	Total number of persons vaccinated.		Total number inspected—								Percentage of	
			By Deputy Sanitary Commissioners or Civil Surgeons.				Native Superintendents or other Inspecting Officers.				By Deputy Sanitary	
			Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Sub-Inspectors.		Depnty Sanitary Commissioners.	
	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.
1	2	3	4	5	6	7	8	9	10	11	12	13
Patna ...	68,234	925	12,845	...	486	569	25,353	...	30,031	1	18'82	...
Gaya ...	55,768	1,156	10,146	...	...	...	18,133	...	28,076	...	18'19	...
Shahabad ...	51,732	461	3,640	...	3,876	...	8,925	...	18,588	...	7'03	...
Saran ...	76,496	696	16,690	...	6,181	601	36,411	8	52,054	...	21'81	...
Champanan ...	49,160	416	10,327	...	5,219	259	16,840	5	17,071	4	20'83	...
Mnzaffarpur ...	88,470	1,227	3,961	...	10,686	624	11,357	...	21,168	98	4'47	...
Darbhanga ...	96,437	335	6,732	...	4,184	200	20,088	20	45,976	39	6'98	...
Monghyr ...	67,336	94	13,408	...	1,290	...	12,591	...	20,812	...	19'91	...
Bhagalpur ...	66,564	1,379	20,191	...	2,187	1,138	25,139	...	38,197	...	31'59	...
Purnea ...	49,559	7,429	12,237	2,965	1,921	...	7,969	654	15,491	952	24'69	39'91
Santal Parganas ...	46,632	1,104	33,521	...	9,887	392	13,546	273	21,755	68	71'88	...
Cnttack ...	73,425	4,533	3,339	...	2,197	95	6,035	96	16,459	301	4'54	...
Balasore ...	21,019	7,998	3,594	...	2,028	375	5,687	151	9,057	211	16'52	...
Angul ...	5,603	6,553	...	...	896	200	1,731	746	1,939	2,423	...	...
Puri ...	30,660	701	3,329	...	373	341	11,402	...	10,745	96	10'45	...
Sambalpnr ...	21,423	1,417	2,612	...	4,195	278	8,032	13	8,308	...	12'19	...
Hazaribagh ...	41,538	866	20,578	...	1,434	...	4,515	...	9,689	...	49'54	...
Ranchi ...	45,693	1,307	7,843	...	5,157	...	8,915	...	21,995	...	17'16	...
Palaman ...	24,708	1,719	14,537	...	2,840	...	6,713	...	8,855	...	58'83	...
Manbhum ...	48,860	2,842	3,461	...	832	952	4,843	11	10,256	1	7'76	...
Singhbhum ...	16,838	1,121	7,929	...	1,427	239	6,429	35	6,508	31	47'08	...
TOTAL ...	1,046,154	44,280	210,920	2,965	67,096	6,263	260,654	2,012	413,030	4,225	20'16	6'69

verified by Inspecting Officers during the year 1916-17.

inspection to total number vaccinated.						Percentage of cases found successful to total number inspected.								Percentage of successful cases reported by vaccinators.	
Commissioners or Civil Surgeons.		By Native Superintendents or other Inspecting Officers.				By Depnty Sanitary Commissioners or Civil Surgeons.				By Native Superintendents or other Inspecting Officers.					
Civil Surgeons.		District Inspectors.		Sub-Inspectors.		Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Snb-Inspectors.			
Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.	Primary.	Revaccination.
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
71	61.51	37.15	...	44.01	10	92.81	...	98.56	61.86	98.39	...	98.43	...	99.26	62.18
...	...	32.51	...	50.34	...	91.36	...	...	...	96.02	...	91.70	...	99.11	74.30
7.49	...	17.25	...	35.93	...	92.03	...	95.33	...	97.09	...	97.56	...	98.67	76.54
8.08	86.35	47.65	21.05	68.04	...	95.77	...	98.47	68.88	97.30	75.00	97.97	...	97.43	63.46
10.61	62.25	34.34	2.97	34.81	2.38	87.61	...	99.52	56.37	98.27	40.00	98.74	100.00	99.33	62.50
12.08	50.87	12.83	...	22.87	29.69	90.92	...	94.89	47.43	94.40	...	96.38	69.23	99.44	63.47
4.33	60.29	21.34	5.97	47.67	11.64	4	...	96.79	79.00	97.79	60.00	98.12	71.79	99.29	65.40
1.91	...	18.69	...	30.90	...	94.27	...	99.61	...	99.28	...	99.45	...	99.73	73.53
3.28	82.52	37.76	...	57.38	...	96.13	...	99.22	94.79	96.26	...	97.15	...	98.68	88.10
3.87	...	16.07	8.80	31.25	12.81	93.70	8	99.53	...	97.46	45.41	99.00	71.63	97.78	61.36
20.77	35.50	29.04	24.72	46.65	6.15	81.2	...	97.57	54.33	97.32	67.03	97.68	76.47	99.09	54.93
2.99	2.09	8.16	2.11	22.40	6.64	96.40	...	92.76	66.31	68.78	66.66	85.48	52.15	94.18	36.04
9.64	4.68	27.05	1.88	43.08	2.63	91.84	...	97.48	61.06	95.16	76.15	95.28	89.57	97.91	83.62
24.71	3.12	30.89	11.39	34.60	36.97	...	...	92.74	100.	88.00	76.89	90.61	81.00	79.86	72.50
1.21	48.64	37.29	...	34.79	30.57	96.32	...	93.83	79.76	96.87	...	95.79	56.25	93.92	61.34
19.58	19.61	37.49	91	38.78	...	97.24	...	92.94	77.69	91.04	53.84	93.19	...	91.04	30.55
3.45	...	10.86	...	23.33	...	96.07	...	97.41	...	98.16	...	99.82	...	99.94	78.46
11.28	...	19.51	...	48.13	...	97.90	...	99.47	...	98.78	...	99.14	...	99.92	77.19
11.49	...	27.17	...	35.83	...	98.55	...	100.	...	96.69	...	98.15	...	99.21	60.24
1.70	33.49	9.91	38	20.99	03	98.43	...	99.39	37.39	98.59	63.63	98.71	...	99.77	40.26
8.47	21.32	38.18	3.12	38.65	2.76	97.74	...	99.18	78.40	93.38	65.71	98.73	80.64	99.50	63.75
6.41	14.14	24.91	4.54	39.48	9.54	95.17	62.78	76.26	58.56	90.49	63.71	90.51	74.69	97.26	65.46

Statement No. VI.—Showing side by side the ratios, per 1,000 of population, of Deaths from

District.	1907-08		1908-09		1909-10		1910-11	
	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.
1	2	3	4	5	6	7	8	9
Patna ...	1·69	52,260	2·94	52,570	1·23	51,589	·30	45,665
Gaya ...	1·93	73,980	2·68	72,395	·62	74,725	·07	68,104
Shahabad ...	·71	50,939	1·76	53,759	·67	46,311	·04	39,890
Saran ...	·29	65,783	·96	74,035	·84	76,930	·07	86,741
Champaran ...	·38	57,722	·80	56,148	·44	63,172	·02	59,887
Muzaffarpur ...	·09	101,292	·23	101,612	·22	98,808	·06	101,395
Darbhanga ...	·11	89,884	·13	75,833	·29	83,005	·07	84,025
Monghyr ...	1·00	80,846	·61	78,958	·30	79,069	·11	85,497
Bhagalpur ...	1·25	76,312	·15	71,328	·24	77,682	·26	74,438
Purnea ...	·41	52,054	·08	50,937	·36	61,698	·39	63,167
Santal Parganas ...	·66	58,350	·71	65,509	·36	67,015	·07	67,446
Cuttack ...	·29	95,087	·28	107,484	·12	134,160	·007	139,487
Balasore ...	1·25	29,806	·64	35,811	·56	44,340	·41	56,052
Angul ...	...	8,283	...	9,022	...	7,602	...	9,353
Puri ...	2·24	55,482	·83	53,920	·16	52,438	·007	53,738
Sambalpur ...	·14	27,441	·17	28,265	·04	27,124	·08	33,399
Hazaribagh ...	·23	48,899	1·27	42,294	·42	42,659	·01	50,075
Ranchi ...	·23	53,933	1·48	44,656	·81	46,968	·07	57,541
Palamau ...	·15	16,241	1·19	27,936	1·42	31,133	·11	21,059
Manbhum ...	·31	63,508	·46	62,937	·21	58,160	·01	60,086
Singhbhum ...	·12	18,527	·22	22,721	·42	17,409	·08	26,593
Total ...	·67	1,170,631	·83	1,189,184	·45	1,241,997	·10	1,283,638

Small-pox and the number of successful vaccinations during the 10 years ending 1916-17.

1911-12		1912-13		1913-14		1914-15		1915-16		1916-17	
Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.
10	11	12	13	14	15	16	17	18	19	20	21
·09	48,687	·07	48,768	·17	48,480	·48	57,665	·71	68,438	·28	67,870
·07	69,923	·008	66,965	·03	67,817	·10	65,855	·68	75,641	·37	56,139
·02	36,809	·006	47,086	·09	53,812	·32	62,079	·45	65,016	·26	51,176
·03	83,221	·006	85,339	·06	81,999	·06	80,729	·15	79,608	·27	74,895
·03	60,354	·07	55,486	·02	63,100	·10	64,146	·14	68,255	·07	49,091
·05	102,535	·04	101,405	·01	103,052	·09	105,292	·24	101,624	·20	88,702
·06	83,343	·01	93,546	·06	93,735	·24	97,760	·41	95,237	·28	96,020
·09	89,123	·08	84,475	·48	89,024	·46	89,749	·42	87,999	·17	67,229
·43	80,294	·41	77,274	·31	75,244	·35	75,831	·38	74,532	·22	66,899
·24	59,409	·14	56,916	·22	60,587	·30	58,496	·38	51,206	·33	53,018
·08	61,909	·19	60,236	·27	64,815	·18	53,182	·37	57,558	·43	46,826
002	153,747	·01	137,175	·01	134,227	·06	113,297	·69	89,925	·46	73,415
·19	63,287	·006	68,271	·11	69,059	·90	53,281	·90	38,609	·24	22,778
...	8,207	...	5,906	...	7,945	...	7,680	·01	9,686	·15	9,226
·006	53,619	·02	55,642	·07	47,269	·02	33,820	·30	37,795	·52	23,228
...	33,153	·04	25,955	·05	25,063	·02	27,561	·75	22,606	1·09	19,938
·006	46,544	·02	46,150	·02	51,777	·03	48,299	·49	46,709	·19	42,148
·02	48,913	·004	51,096	·01	49,989	·03	50,958	·12	52,111	05	43,667
·008	24,782	...	22,383	·07	21,459	·10	28,327	·17	31,808	·15	25,542
·0006	60,420	·005	61,191	·02	61,316	·43	73,369	·63	54,056	·23	49,379
·004	22,841	·05	20,254	·09	23,496	·45	25,909	·28	19,526	·12	17,429
...
·08	1,288,620	·06	1,270,859	·11	1,292,965	·22	1,273,285	·42	1,230,745	·28	1,053,015

Statement No. VII.--Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1916-17.

District.	Towns.	Number of births during the year ending 31st March 1917.	Number of deaths amongst infants under one year during the year ending 31st March 1917.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1917.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Patna	Patna ...	3,506	706	2,135	1st October 1884.
	Bihar ...	1,359	228	939	1st April 1887.
	Dinapur ...	1,240	231	737	28th January 1891.
	Barh ...	364	64	236	1st April 1887.
	Khagole ...	236	41	151	12th July 1910.
	Total ...	6,705	1,270	4,198	
Gaya	Gaya ...	2,189	646	1,137	1st January 1883.
	Tikari ...	204	55	77	3rd „ 1891.
	Daudnagar ...	294	41	159	Ditto.
	Total ...	2,687	742	1,373	
Shahabad	Arrah ...	1,563	261	1,157	20th July 1885.
	Buxar ...	580	95	332	1st April 1887.
	Dumraon ...	313	90	107	Do.
	Jagadespur ...	469	60	287	20th December 1890.
	Sassaram ...	1,000	203	715	1st April 1887.
	Bhabhua ...	232	54	192	Ditto.
	Total ...	4,187	763	2,790	
	Total of Patna Division.	13,579	2,775	8,361	
Saran	Chapra ...	1,742	321	539	1st April 1887.
	Revelganj ...	1,328	189	218	12th December 1890.
	Siwan ...	557	96	273	1st April 1887.
	Total ...	3,621	606	1,030	
Champanan	Motihari ...	395	73	184	1st April 1887.
	Bettiah ...	647	148	466	Ditto.
	Total ...	1,042	221	650	

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1916-17—contd.

District.	Towns.	Number of births during the year ending 31st March 1917.	Number of deaths amongst infants under one year during the year ending 31st March 1917.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1917.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Muzaffarpur	Muzaffarpur ...	1,320	258	875	1st January 1886.
	Sitamarhi ...	415	92	157	1st April 1887.
	Hajipur ...	732	128	581	1st May 1890.
	Lalganj ...	372	78	336	1st April 1887.
	Total ...	2,839	556	1,949	
Darbhanga	Darbhanga ...	2,444	471	1,019	24th May 1884.
	Roserha ...	336	89	172	3rd January 1891.
	Samastipur ...	255	40	175	25th July 1910.
	Madhubani ...	571	75	257	1st April 1887.
	Total ...	3,606	675	1,623	
	Total of Tirhut Division.	11,108	2,058	5,252	
Monghyr	Monghyr ...	1,933	348	586	15th November 1882.
	Jamalpur ...	973	184	477	Ditto.
	Total ...	2,906	532	1,063	
Bhagalpur	Bhagalpur ...	1,914	393	969	15th February 1884 withdrawn on 16th October 1895 ; re-extended on 18th August 1898.
	Colgong ...	211	36	76	Ditto re-extended on 19th December 1901.
	Total ...	2,125	429	1,045	
Purnea	Purnea ...	316	56	218	1st July 1887.
	Kishanganj ...	151	41	193	12th November 1892.
	Katihar ...	269	42	192	8th August 1910.
	Forbesganj ...	107	20	64	9th August 1912.
	Total ...	873	159	667	

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1916-17—contd.

District.	Towns.	Number of births during the year ending 31st March 1917.	Number of deaths amongst infants under one year during the year ending 31st March 1917.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1917.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Santal Parganas ...	Sahibganj ...	490	64	245	1st May 1884.
	Deoghar ...	232	58	81	Ditto.
	Dumka ...	314	50	189	Notifications dated the 9th April 1884 and 3rd August 1910.
	Madhupur ...	294	44	84	22nd August 1910.
	Total ...	1,330	216	599	
	Total of Bhagalpur Division.	7,234	1,332	3,374	
Cuttack ...	Cuttack ...	1,301	274	1,114	1st September 1884.
	Kendrapara ...	465	102	173	7th February 1888.
	Jajpur ...	332	92	143	Ditto.
	Total ...	2,098	468	1,430	
Balasore ...	Balasore ...	526	102	148	7th February 1888.
Puri ...	Puri ...	719	275	190	Ditto.
Sambalpur ...	Sambalpur ...	408	93	242	7th March 1895.
	Total of Orissa Division.	3,751	938	2,010	
Hazaribagh ...	Hazaribagh ...	559	77	292	1st January 1885.
	Chatra ...	284	50	332	1st August 1885.
	Giridih ...	300	32	109	8th September 1910.
	Total ...	1,143	159	733	
Ranchi ...	Ranchi ...	1,105	135	909	1st April 1887.
	Lohardaga ...	173	18	136	25th June 1892.
	Total ...	1,278	153	1,045	

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1916-17—conold.

District.		Towns.	Number of births during the year ending 31st March 1917.	Number of deaths amongst infants under one year during the year ending 31st March 1917.	Number of successful vaccinations amongst infants under one year during the year ending 31st March 1917.	Date of extension of Vaccination Act to town.
1		2	3	4	5	6
Palamau	...	Daltonganj	265	47	198	9th October 1890.
		Purulia	428	47	303	1st January 1887.
Manbhum	...	Raghunathpur	154	18	76	9th February 1894.
		Jhalda	174	37	44	9th July 1892.
			756	102	423	
Singhbhum	...	Chaibassa	262	43	235	20th June 1892.
		Total of Chota Nagpur Division.	3,704	504	2,635	
		Total for the Pro- vince.	39,376	7,607	21,632	



ANNEXURE II.

Provincial Statement.—Showing the different kinds of lymph

District.	Primary vaccination.												
	Direct from the calf.					With lanoline or glycerine lymph.					Arm-to-arm.		
	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	
1	2	3	4	5	6	7	8	9	10	11	12	13	
Patna	68,234	67,329	498	407	98·67	...	...
Gaya	55,768	55,280	383	105	99·12	...	...
Shahabad	50,902	50,232	526	144	98·94	830	780	
Saran	76,496	74,466	993	1,037	97·34	...	...
Champaran	49,160	48,831	251	78	99·33	...	...
Muzaffarpur	88,470	87,985	423	62	99·45	...	...
Darbhanga	96,437	95,801	594	42	99·34	...	...
Monghyr	67,336	67,158	174	4	99·34	...	...
Bhagalpur	66,564	65,684	795	85	98·68	...	...
Purnea	45,707	44,609	1,044	4	97·53	3,852	3,850	
Santal Parganas	46,632	46,209	285	138	99·09	...	...
Cuttack	73,424	71,781	728	915	97·76	...	...
Balasore	21,019	17,879	380	2,760	85·06	...	...
Angul	5,603	4,475	855	273	79·36	...	...
Puri	30,660	28,798	698	1,164	93·92	...	...
Sambalpur	...	6,022	5,783	239	...	96·03	15,401	13,722	919	760	89·09
Hazaribagh	41,538	41,490	28	20	99·88	...	...
Ranchi	45,693	45,658	19	16	99·92	...	...
Palamau	24,708	24,505	85	118	99·65	...	...
Manbhum	48,860	48,234	411	215	98·71	...	...
Singhbhum	16,838	16,697	95	46	99·10	...	...
TOTAL	...	6,022	5,783	239	...	96·03	1,035,450	1,016,823	10,184	8,443	98·20	4,982	4,680

II.

used and their rates of success during the year 1916-17.

Revaccination.																	
vaccination.			Direct from the calf.					With lanoline or glycerine lymph.					Arm-to-arm vaccination.				
Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
...	925	541	329	55	58.48	...	...	...	...	...
...	1,156	859	107	190	74.30	...	...	...	...	...
50	...	94.09	...	...	...	...	...	461	164	19	278	35.57	...	...	...	...	...
...	696	429	181	86	61.63	...	...	...	...	...
...	416	260	137	19	62.50	...	...	...	...	...
...	1,228	717	279	232	58.38	...	...	...	...	...
...	5	219	111	5	65.37	...	...	...	...	...
...	94	71	23	...	66.66	...	...	...	...	...
...	1,379	1,215	142	22	88.10	...	...	...	...	...
2	...	99.99	...	...	...	...	...	7,429	4,559	2,131	739	61.36	...	...	...	...	...
...	1,104	617	348	139	55.88	...	...	...	...	...
...	4,533	1,634	1,580	1,319	36.04	...	...	...	...	...
...	7,998	4,299	842	2,857	53.75	...	...	...	...	...
...	6,553	4,751	1,376	426	72.50	...	...	...	...	...
...	701	430	169	102	61.34	...	...	...	...	...
...	1,417	433	386	598	30.55	...	...	...	...	...
...	866	658	199	9	75.98	...	...	...	...	1
...	1,307	1,009	213	85	77.19	...	...	...	...	...
...	1,719	1,037	465	217	69.04	...	...	...	...	...
...	2,842	1,145	1,506	191	40.80	...	...	...	...	...
...	1,121	732	305	84	65.29	...	...	...	...	...
52	...	98.88	...	...	...	...	...	44,280	25,779	10,848	7,653	58.21	...	...	...	...	...

